RTCA Special Committee 186, Working Group 5

ADS-B UAT MOPS

Meeting #9

Draft 1 of UAT MOPS Appendix J: Reference Upper-layer Protocol for UAT Serial Interface

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SUMMARY
The purpose of this appendix is to define a reference implementation of those layers above the physical layer for byte-wise transmission of messages that may be received by a UAT, as well as ownship message transmissions. This Working Paper is intended to satisfy UAT MOPS action item 8-12.

UAT MOPS Appendix J
Reference Upper-layer Protocol of UAT Serial Interface

1.0 Background

The purpose of this appendix is not to design or specify a physical layer interface between the receiver function of a UAT and an external application. Instead, the purpose of this appendix is to define a reference implementation of those layers above the physical layer for byte-wise transmission of messages that may be received by a UAT, as well as ownship message transmissions.

2.0 Serial Data Format Description

Table J-1. Data Packet Format

# Bytes	Content
1	ASCII STX (start of text) byte (02_{16}).
2	Length of data transmission (bytes, excluding STX, length, and ETX).
1	Packet type (types defined in Table J-2 below)
Variable	Message payload (see Table J-2 below)
3	Time of applicability (seconds since UTC midnight)
4	Time of message reception (hundreds of nanoseconds after UTC tick)
TBD	Other reception info (TBD)
1	Checksum (exclusive-OR sum of all bytes between STX and ETX is zero)
1	ASCII ETX (end of text) byte (03_{16}).

Notes:
1. Fields are listed in order of transmission.
2. Multi-byte fields are transmitted MS byte first.
3. In cases where the STX or ETX byte appears in the data stream, that byte should be preceded by a DLE (data link escape) byte (10_{16}). The DLE byte can appear in the data by sending two consecutive DLE bytes.

Table J-2. Packet Types

Packet Type #	Packet Type	Content
0	Ground Uplink	8 to 432 bytes (depending on Application Data payload). Data defined in Table [2.2.3.2.3].
1	ADS-B Air-to-Air (received)	18 or 34 bytes. Data defined in Tables [2.2.4.1-A/B] (short message) and [2.2.4.2-A/B] (long message).
2	ADS-B Air-to-Air (ownship)	18 or 34 bytes. Data defined in Table [2.2.4.1-A/B] (short message) and [2.2.4.2-A/B] (long message).
TBD…		